

REMARKS

STATUS OF THE CLAIMS

In accordance with the foregoing, claims 1, 2, 4, 5, 8-10, 13 14, 16 and 18-22 have been amended. Claims 11, 12 and 17 have been cancelled. Claims 1-10, 13-16 and 18-22 are pending and under consideration.

No new matter is being presented, and approval of the amended claims is respectfully requested.

REJECTIONS OF CLAIMS 4-16 UNDER 35 U.S.C. §112, SECOND PARAGRAPH

On page 2, item 3, of the Office Action, claims 4-16 are rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In light of the foregoing amendments, it is submitted that the claims, as amended, particularly point out and distinctly claim the subject matter of the invention. Thus, it is respectfully submitted that the rejections of claims 4-10 and 13-16 are overcome.

Claims 11 and 12 are cancelled and, thus, it is respectfully submitted that the rejections thereof are moot.

REJECTIONS UNDER 35 U.S.C. §102(b) AND (e)

The rejections under 35 U.S.C. §102(b) and (e) are respectfully traversed and reconsideration is requested.

Claims 1 and 18

On page 4, item 7, of the Office Action, claims 1 and 18 are rejected under 35 U.S.C. §102(b) as being anticipated by Appelt (U.S. Patent No. 6,222,136).

The Examiner asserts that Appelt discloses all the limitations of claims 1 and 18. However, in Appelt, the second etching is performed by completely removing the first photoresist and applying a second photoresist, provided in a pattern. (Column 5, line 63-column 6, line5).

Appelt does not teach applying a positive liquid resist, exposing the positive liquid resist, and etching again the metal layer by means of a second mask comprising the first mask and the protected positive liquid resist to form a conductive pattern, as recited in claims 1 and 18.

Therefore, it is respectfully submitted that claims 1 and 18 patentably distinguish over the reference.

Claims 11 and 17

On page 4, item 9, of the Office Action, claims 11 and 17 are rejected under 35 U.S.C. §102(b) as being anticipated by Hamada (U.S. Patent No. 6,130,027).

Claims 11 and 17 are cancelled herein. Therefore, it is submitted that the rejections thereof are moot.

Claims 11, 12 and 17-22

On page 5, item 11, of the Office Action, claims 11, 12 and 17-22 are rejected under 35 U.S.C. §102(e) as being anticipated by Lokhorst (U.S. Patent No. 6,635,407).

It is submitted that the rejections of claims 11, 12 and 17 are moot, since they are cancelled herein.

Regarding claims 18-22, Lokhorst discloses partially etching a base metal on both sides, and then coating the partially etched metal with a positive liquid photoresist. (Column 3, lines 23-28 and Figs. 2A-2F). However, in Lokhorst, the first masking is completely removed prior to applying the positive liquid photoresist. Then, the positive liquid photoresist is exposed to light through a photomask, and the metal is etched again. (Column 3, lines 7-35 and Figs. 2A-2F).

In contrast, claims 18, 20 and 22 recite exposing the positive liquid resist with light from the upper surface of the first mask and developing the positive liquid resist such that a protected portion of the positive liquid resist located under the first mask is unexposed and undeveloped. Therefore, it is respectfully submitted that claims 18, 20 and 22 patentably distinguish over Lokhorst.

Claim 19 depends from claim 18 and claim 21 depends from claim 20. Claims 19 and 21 inherit the patentability of their respective base claims and, therefore, it is respectfully submitted that claims 18-22 patentably distinguish over the reference.

Claims 11, 13, 15-18, 20 and 22

On page 5, item 13, of the Office Action, claims 11, 13, 15-18 and 22 are rejected under 35 U.S.C. §102(b) as being anticipated by Kenji (JP 05-121482).

Claims 11 and 17 are cancelled herein and, thus, it is submitted that the rejections thereof are moot.

Regarding claims 13, 15, 16, 18 and 22, Kenji discloses a first metal layer 1 layered on

both sides with metal layers 2 and 3. Resist film 5 is applied to layers 2 and 3 and they are etched. Film 5 is removed and another resist film 6 is applied. Then, metal layer 1 is etched using resist film 6 as a mask. (Fig. 1 and [0013]).

Kenji does not disclose half-etching the metal plate, applying positive liquid second resist on the half-etched first metal layer, exposing the positive liquid resist, or etching again the first metal plate, as recited in claims 13, 17, 18, 20 and 22. Therefore, it is submitted that Kenji does not anticipate the limitations of claims 13, 17, 18, 20 and 22.

Claims 15 and 16 depend from claim 13 and inherit its patentable limitations. Therefore, it is respectfully submitted that claims 15 and 16 are patentable over the reference.

REJECTIONS UNDER 35 U.S.C. §103(a)

The rejections under 35 U.S.C. §103(a) are respectfully traversed and reconsideration is requested.

Claims 4, 5 and 7-10

On page 5, item 16, of the Office Action, claims 4 and 7-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Appelt in view of Co (U.S. Patent No. 6,357,023).

The Examiner concedes that Appelt does not disclose forming a second metal layer on the first metal layer. However, he states that Co teaches that a typical printed circuit board usually contains multiple metal layers, citing column 6, lines 9-11.

However, as argued above, Appelt does not teach applying a positive liquid resist, exposing the positive liquid resist, and etching again the first metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern, as recited in independent claims 4 and 9. Therefore, the limitations recited in claims 4 and 9 are not obvious from Appelt, in view of Co.

Claims 7 and 8 depend from claim 4, and claim 10 depends from claim 9. Claims 7, 8 and 10 inherit the patentability of their base claims and, therefore, it is respectfully submitted that claims 4 and 7-10 patentably distinguish over the references.

On page 6, item 19, the Examiner rejects claim 5 under 35 U.S.C. §103(a) as being unpatentable over Appelt in view of Co, as applied to claim 4, and further in view of Gearhart (U.S. Patent No. 5,858,622).

The Examiner provides not cited language in Gearhart in support of this rejection;

however, claim 5 depends from claim 4 and inherits its patentable limitations. It is further submitted that Gearhart does not teach or suggest applying a positive liquid resist, exposing the positive liquid resist, and etching again the first metal layer through openings of a second mask, comprising the first mask and the protected positive liquid resist, to form a conductive pattern, as recited in claim 4.

Therefore, it is respectfully submitted that claim 5 patentably distinguishes over the references.

Claims 2 and 19

Claims 2 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Appelt, as applied to claims 1 or 18, and further in view of Gearhart (U.S. Patent No. 5,858,622).

As argued above for claims 1 and 18, Appelt does not teach applying a positive liquid resist, exposing the positive liquid resist, and etching again the first metal layer through openings of a second mask, comprising the first mask and the protected positive liquid resist, to form a conductive pattern, as recited in independent claims 1 and 18.

The Examiner provides no cited language of Gearhart in support of this rejection; however, it is submitted that Gearhart does not teach the features of claims 1 and 18 provided above. Therefore, it is submitted that the features recited in claims 1 and 18 are not obvious over Appelt, in view of Gearhart.

Claims 2 and 19 depend from claims 1 and 18 respectively, and inherit their patentable recitations. Therefore, it is respectfully submitted that claims 2 and 19 patentably distinguish over the references.

Claims 12, 14, 19 and 21

On page 6, item 21, of the Office Action, claims 12, 14, 19 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kenji, as applied to claims 11, 13, 18 or 20, and further in view of Gearhart.

It is submitted that the rejection of claim 12 is moot since it is cancelled herein.

As argued above, independent claims 13, 18 and 20 patentably distinguish over Kenji.

The Examiner provides no citations of Gearhart in support of the rejections, so we are unsure of the Examiner's rationale for rejecting claims 14, 19 and 21 in view of Gearhart. However, it is respectfully submitted that Gearhart does not teach half-etching the metal plate, applying positive liquid second resist on the half-etched first metal layer, exposing the positive

liquid resist, or etching again the first metal plate, as recited in claims 13, 18 and 20. Therefore, it is submitted that the features recited in claims 13, 18 and 20 are not obvious from Kenji, in view of Gearhart.

Claims 14, 19, and 21 depend from claims 13, 18 and 20 respectively, and inherit their patentable limitations. Therefore, it is respectfully submitted that claims 14, 19 and 21 patentably distinguish over the references.

Claim 3

On page 7, item 23, of the Office Action, claim 3 is rejected under 35 U.S.C. §103(a) as being unpatentable over Appelt, as applied to claim 1, and further in view of Ishio (U.S. Patent No. 6,583,843).

As argued above, Appelt does not teach applying a positive liquid resist, exposing the positive liquid resist, and etching again the metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern, as recited in claim 1. Thus, claim 1 patentably distinguishes over Appelt. Claim 3 depends from claim 1 and inherits its patentable limitations. Therefore, it is respectfully submitted that claim 3 patentably distinguishes over the references.

Claim 6

On page 7, item 24, of the Office Action, claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Appelt in view of Co, as applied to claim 4, and further in view of Ishio.

As argued above, Appelt does not teach applying a positive liquid resist, exposing the positive liquid resist, and etching again the first metal layer by means of a second masking composed of the first masking and the protected positive liquid resist to form a conductive pattern, as recited in claim 4. It is further submitted that Co does not teach these features. Thus, claim 4 patentably distinguishes over Appelt in view of Co. Claim 6 depends from claim 4 and inherits its patentable limitations. Therefore, it is respectfully submitted that claim 6 patentably distinguishes over the references.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. Further, all pending claims patentably distinguish over the prior art. There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that

effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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